REMARKS

Reconsideration and allowance of the subject Application are respectfully requested. Claims 1-11 are all the claims pending in the application, of which claims 1 and 11 are independent. Applicant respectfully submits that the pending claims define patentable subject matter.

Applicants would like to thank the Examiner for the telephonic interview of February 10, 2009. During the interview with the Examiner, the Examiner alleged that a signal that is constantly measured corresponds to the recited signal that is "synchronized with rotation of rotating body." Applicants have provided below a discussion of why a signal that is constantly measured cannot reasonably correspond to the recited signal that is "synchronized with rotation of rotating body."

I. Claim Rejections - 35 U.S.C. § 102

The Examiner has maintained the rejections of claims 1-2 and 11 under 35 U.S.C. § 102(b) as allegedly being anticipated by Brown, JR. (U.S. Publication No. 2004/0017289 A1; hereinafter "Brown"). Applicants traverse these rejections for at least the following reasons.

Synchronized with Rotation of Rotating Body

Claim 1 relates to a device for detecting an abnormality of a rotating body comprising "means for extracting a signal which is synchronized with the rotation of rotating body by the data measured by the measuring means" wherein the extracted signal is used to determine a condition of the rotating body, and a warning is given when the condition is abnormal.

The word "synchronized" is defined as "to adjust the periodicities of two or more electrical or mechanical devices so that the periods are equal or integral multiples or fractions of each other" (Random House Unabridged Dictionary, copyright 1997 by Random House, Inc.).

It is submitted that a constantly updated signal is updated at an infinite rate, and infinity is not an integral multiple or a fraction of the period of rotation. Because a constantly updated signal does not have a period that is equal to, an integral multiple or, or a fraction of the period of the rotating body, Applicants submit that a constantly updating signal does not correspond to means for extracting a signal that is synchronized with the rotating body, as alleged.

To better illustrate the device of claim 1, Applicants refer the Examiner to one of the exemplary embodiments shown in Fig. 6 and described in paragraphs [0025] and [0026]. The top graph illustrates an input signal X(i) measured by measuring the vibrational acceleration of each tire (1-1, 1-2, 1-3, and 1-4) on a rough road (Fig. 6; and paragraph [0025]). The middle graph illustrates the output signal Y(i) of the digital filter of the extracting means (paragraphs [0015] and [0025]) which is a cyclical signal that has correlation with and is therefore synchronized with the rotation of the tire (paragraph [0015]).

The Brown Reference

Applicants respectfully submit that Brown cannot meet the recitation in claim 1 of "means for extracting a signal which is <u>synchronized with the rotation of rotating body</u> by the data measured by the measuring means."

Brown measures an ambient temperature and sets a threshold warning pressure based upon that ambient temperature (paragraph [0010], lines 14-17). Thereafter, gauge pressure and gauge temperature inside the tire cavity are measured and used to calculate an equivalent pressure (filter pressure) at the ambient temperature (paragraph [0010], lines 19-22).

The steps for filtering or correcting the pressure in Brown are performed by plotting data of temperature and pressure, fitting a line and polygon to the data to get a hull (12) of where most data points lie for a given cold inflation pressure (paragraph [0050]). This is done for many

different cold inflation pressures to get a graph (paragraph [0050]). Thereafter, the cold inflation pressure can be determined by determining where the most data points of temperature and pressure lie on that graph for a specified period of time (paragraph [0050]). This equated, cold inflation pressure is compared with the threshold warning pressure and a warning is issued if the equated or filtered pressure is below the warning pressure (paragraph [0010], lines 22-26). Brown uses temperature and pressure <u>independent of rate of rotation of the tire</u> to detect an abnormal condition.

In response to the arguments submitted in the Amendment filed September 18, 2008, the Examiner alleges that because Brown detects the pressure and temperature, where the signals are <u>constantly</u> updated during the operation in motion, Brown teaches extracting a signal which is <u>synchronized</u> with the rotation of the rotating body (*see* Office Action, paragraph spanning pages 10 and 11, emphasis added). The Examiner reiterated this point during the telephone interview. Applicants respectfully disagree.

Referring to Fig. 6 of the exemplary embodiments of the present application, the temperatures measured in Brown would merely correspond to X(i), i.e., an unsynchronized signal. That is, the graph shown in Fig. 3 of Brown would be the equivalent signal shown in the top graph of Fig. 6 of the present Application except that Brown is measuring temperature while the present Application is measuring vibration. Brown admits that temperature readings will vary widely and can cause consequent false alarms (paragraph [0060]). To solve this problem, Brown measures temperature and pressure over a specified period of time and determines in which hull of Fig. 1, the maximum number of data points lies.

The device of claim 1 solves this problem in a different way, namely by extracting a signal that is synchronized with the rotating body from that measured data and getting rid of a signal that is not synchronized with the rotating body.

In light of the above, Applicants submit that Brown fails to teach or suggest extracting a signal which is synchronized with the rotation of rotating body and that claim 1 is patentable over Brown.

Because claim 2 depends on claim 1, Applicants submit that this claims should be allowable at least by virtue of their dependency. Moreover, claim 11 should be allowable for at least the same reasons as claim 1.

In addition, claim 2 recites that "the various physical quantities of the rotating body measured by the measuring means is a signal correlated with vibration, sound, rotating number or rotation." The Examiner points to paragraph [0006], lines 3-9 of Brown as teaching this feature. However, that paragraph merely states that various types of sensors for pressure detection are available and the method should be operable with any of those types. Brown fails to disclose a signal correlated with any of the claimed variables. Accordingly, claim 2 is further distinguishable over Brown at least for its recitation of "a signal correlated with vibration, sound, rotating number or rotation."

II. Claim Rejections - 35 U.S.C. § 103

The Examiner has rejected claims 3-10 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brown as applied to claim 1 above, and further in view of Brusarosco et al. (U.S. Publication No. 2007/0010928 A1; hereinafter "Brusarosco").

Because Brusarosco fails to supply the deficiencies of Brown, Applicants submit that claims 3-10 are patentable at least by virtue of their dependency.

In regard to claim 5, the Examiner points to paragraph [0020] of Brown as allegedly teaching a delay circuit provided on a signal line between an input portion of data from the measuring means and an adaptive digital filter, as included in claim 5.

However, this paragraph merely discloses that before measuring the amplitude, the signal is filtered with a law-pass filter (paragraph [0020]). Those skilled in the art would understand that a low-pass filter is not the same as a delay circuit.

Additionally, regarding claim 6, the Examiner points to paragraph [0020] of Brown as allegedly teaching a delay circuit provided on a signal line between an input portion of data from the measuring means and a comparator, as claimed.

However, this paragraph describes a prior art patent that measures the distance between a vehicle axle and the road to determine tire deflection which is, according to Brown, "a comparatively exact measure of the respective [tire] load" (paragraph [0006]). Those skilled in the art would understand that this measurement in Brown of tire load is not the same as the claimed delay circuit.

Because neither Brown nor Brusarosco teach a delay circuit, claims 5 and 6 are further distinguishable over the cited references for the features recited therein.

Regarding claim 9, the Examiner alleges that the sampling device of Brusarosco allegedly corresponds to the claimed features that "the data measured by the measuring means is sampled by a variable sampling in accordance with the data of rotating speed information."

However, Brusarosco merely discloses that a sampling device samples the signal "at a frequency of at least 5 kHz, preferably of at least 7 kHz" (paragraph [0048]), but fails to allege that the sampling is in accordance with any rotating speed information. Accordingly, it is submitted that claim 9 is further patentable for the features recited therein.

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

Stacey A Fluhart

Stacey A. Fluhart
Registration No. 63,726

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: February 25, 2009